

REMARKS

Receipt of the Office Action mailed October 9, 2001 is acknowledged. Claims 2, 4 and 5 have been amended to address the section 112 rejections. New claims 14 to 16 have been added, support for which can be found in claims 2, 4 and 5. No new matter has been entered. Reconsideration and withdrawal of the rejection in view of the following remarks are respectfully requested.

I. Rejection of claims 2, 4 and 5 under 35 U.S.C. § 112, second paragraph, as being indefinite

In order to overcome the rejection, applicants have canceled the preferred clauses. The amendments to claims 2, 4 and 5 clearly do not narrow the scope of the claims. New claims 14 to 16 that incorporate the preferred clauses have been entered. Accordingly, applicants submit that this rejection has been obviated.

II. Rejection of claims 1 - 11 under 35 U.S.C. § 103(a) as being unpatentable over Miller (US 4,388,331) in view of Hammer et al. (US 5,736,179)

The Examiner continues to reject the claims as being *prima facie* obvious over Miller, U.S. Patent No. 4,388,331 ("Miller") in view of Hammer et al., U.S. Patent No. 5,735,279 ("Hammer"). Reconsideration and withdrawal of the rejection are respectfully requested.

Miller teaches a sausage casing based on collagen, i.e., on a protein material. Distributed uniformly throughout the casing are immobilized proteolytic enzymes, i.e., proteases, which are activated during the smokehouse or cookhouse cycle. Proteases cleave proteins in the casing wall and thereby tenderize it. To become active, enzymes require a certain amount of water. Drying of the casing thus renders them inactive. Upon rehumidification the enzyme is hence activated again (col. 4, lines 12-25).

Proteases do not act on cellulose.

Hammer et al. '179 teach a tubular food casing based on cellulose, which has a coating on the inner and/or outer surface. The coating comprises chitosan which is chemically linked to the cellulose. On the inner surface, the coating improves the

peelability. On the outer surface the coating protects the cellulose-based casing from being attacked by cellulytic enzymes, i.e., by cellulases. This is what is disclosed in Example 4 of Hammer. There is no enzyme treatment disclosed in Hammer. Rather, Hammer teaches how enzyme action can be prevented, and thus teaches away from the claimed invention.

Proteases and cellulases are not identical or even comparable, except that both are enzymes. Cellulases cleave cellulose, but leave proteins unaffected.

Until the present invention, cellulytic enzymes were regarded as absolutely unwanted and detrimental. Once a cellulose-based casing is infected by microorganisms producing cellulytic enzymes, the degradation of the casing starts. This has an impact on its tensile strength and finally destroys the casing. Thus, the understanding in the art, prior to the present invention, was to avoid cellulytic enzymes.

According to the claimed invention, the surface of the cellulose casing is modified by the action of cellulases. The enzymes are subsequently deactivated permanently and cannot be activated again. Due to the modification, the casing is protected from being attacked again by cellulases. The combination of Miller and Hammer simply fails to teach or suggest the claimed invention. As such, reconsideration and withdrawal of the rejection are respectfully requested.

III. Rejection of claim 13 under 35 U.S.C. § 103(a) as being unpatentable over Miller (US 4,388,331) in view of Hammer et al. (US 5,262,211)

On page 5 of the Office Action the Examiner states that "it would have been obvious to one of ordinary skill in the art to have used the teachings of Hammer et al. to extend the method of Miller to obtain a method of tenderizing fibrous hydrated cellulose sausage casings instead of collagen casings". Applicants respectfully submit that this statement is incorrect. The cellulases employed in the present invention do not tenderize the casing. They simply act on the surface of the casing for a certain limited period of time and are subsequently destroyed. The result of this treatment is that the surface is protected against a renewed attack by cellulases, which are frequently produced by the mould used in the production of mould-ripened salami.

Again, Applicants stress that in the present invention the cellulytic enzymes are applied to the surface of the casing only (i.e., they are not distributed in the casing material, as taught by Miller) and that they are inactivated permanently. Thus, the combination of Miller and Hammerfails to teach or suggest the claimed invention.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

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Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge deposit account No. 19-0741 for any such fees; and applicant hereby petitions for any needed extension of time.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Marked up rewritten claims:

2. (Amended) The process as claimed in claim 1, wherein the cellulase is allowed to act at a pH in the range from 4.0 to 7.5[, preferably 4.5 to 7.0].

4. (Amended) The process as claimed in claim 1, wherein the cellulase is allowed to act at a temperature in the range of 50 to 68°C, [preferably up to 60°C,] for 20 seconds to 40 minutes[, preferably 2 minutes to 20 minutes].

5. (Amended) The process as claimed in claim 1, wherein the cellulase is employed in the form of an aqueous solution with a content of 0.2 to 20 % by weight, [preferably 0.5 to 5% by weight,] of cellulase, based on the total weight of the solution.